

REMARKS

Claim 1 has been amended to incorporate the subject matter of claims 8 and 9. Claims 4 and 5 have been amended to make the units consistent with the disclosure at paragraph [0042] in the specification. Claim 11 has been amended to correct informalities. Claims 8 and 9 have been canceled. The specification has also been amended to correct informalities. No new matter has been added. Upon entry of this Amendment, which is respectfully requested, Claims 1-7 and 10-11 will be pending.

Response to Objection to the Specification

The specification has been objected to because of informalities.

The specification has been amended to correct informalities. Accordingly, withdrawal of the objection is respectfully requested.

Response to Claim Objections

Claims 8 and 11 were objected to because of informalities.

As noted, Claim 11 has been amended to correct informalities. Claim 8 has been canceled. Accordingly, withdrawal of the objection is respectfully requested.

Response to Claim rejections Under § 112

Claims 4 and 5 were rejected under 35 U.S.C. § 112 as being indefinite.

Claims 4 and 5 have been amended to make the units consistent with the disclosure of the specification. Accordingly, withdrawal of the rejection is respectfully requested.

Response to Claim Rejection Under § 102

Claims 1-6 and 9 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,484,836 to Kikuchi et al. ("Kikuchi '836"), WO 91/13944 to Chiung-Huei et al., U.S. Patent No. 6,058,994 to Amino et al. and U.S. Patent No. 5,985,978 to Kikuchi et al. ("Kikuchi '978").

In response, Applicants note that claim 1 has been amended to incorporate the recitations of claims 8 and 9. Since claim 8 was not included in this rejection, Applicants submit that this rejection has been overcome by the amendment of claim 1. Accordingly, withdrawal of this rejection is respectfully requested.

Response to Claim Rejection Under §§ 102/103

Claim 1-10 are rejected under 35 U.S.C. § 102 as allegedly being anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as allegedly being obvious over Kikuchi '836.

Applicants respectfully traverse.

Present Claim 1 recites, *inter alia*, a rubber composition for a tire tread comprising 10-250 parts by weight of a carbon black per 100 parts by weight of a rubber component, wherein the carbon black has a hydrogen desorption ratio $> 0.260-6.25 \times 10^{-4} \times \text{CTAB (wt\%)}$ and a toluene tinting permeability of not less than 90%. Claim 1 further recites the process by which the carbon black is produced.

Kikuchi '836 discloses a rubber composition for a tire tread comprising 20 to 75 parts by weight of carbon black having CTAB of 85 to 110 m²/g, C-DBP of more than 105 ml/100 g, N₂SA/IA of more than 1.10, Tint of more than 105, ΔDst of 60 to 80 nm, and CTAB of less than 230-5.8 (dn) wherein dn is the average particle size (nm), measured by an electron microscope. *See*, abstract, col. 2, lines 7-10 and Claim 1. Kikuchi '836 also discloses various specific carbon blacks, including N110, N220, CB-1 and CB-2. *See*, Table 3. However, Kikuchi '836 does not disclose or suggest the process by which its carbon black is made.

Regarding claim 8 (now included in claim 1), the Examiner indicates on page 9 of the Office Action that Applicants claim that the hydrogen desorption ratio is greater than 0.260-6.25x10⁻⁴xCTAB (wt%). Further, the Examiner notes that Kikuchi '836 does not specifically teach this property for their N220, and the Examiner indicates that this is not a test that is usually used in the art to test the properties of carbon black. The Examiner takes the position that CB-1 or CB-2 would inherently meet this limitation. In this regard, the Examiner indicates that all four (DBP, compressed DBP, CTAB, and TINT) of the physical properties taught by Kikuchi '836 meet Applicants' limitations. Also, the Examiner indicates that Applicants allege that when the hydrogen desorption ratio does not meet the limitation of their invention, the wear resistance of the tire tread lowers and the heat buildup becomes undesirably high (paragraph 0023). Further, the Examiner indicates that like the present invention, Kikuchi '836 is concerned with wear resistance and heat buildup in the tire tread, and the Examiner indicates that Tables 1 and 2 in Kikuchi '836 show that CB-1 and CB-2 provide both low heat buildup and good wear resistance. The Examiner indicates that if Applicants' allegations are correct, the hydrogen desorption ratios

of CB-1 and CB-2 must meet Applicants' limitations, or else the heat buildup and wear resistance values would have been bad.

In response, Applicants submit that contrary to the Examiner's assertion, CB-1 and CB-2 do not inherently satisfy the hydrogen desorption ratio required for the present invention, as discussed below.

While the Examiner indicates that all four (DBP, compressed DBP, CTAB, and TINT) of the physical properties taught by Kikuchi '836 [for CB-1 and CB-2] meet Applicants' limitations, Applicants note that all four of DBP, compressed DBP, CTAB, and TINT for N110 and N220 meet Applicants' limitations for those properties. Despite that, N110 and N220 do not meet the hydrogen desorption ratio requirement for the present invention, as can be seen from the table below showing information for various carbon blacks (the hydrogen desorption ratio values for N110 and N220 are from Japanese Patent 2562338B). That is, the values for N110 and N220 do not satisfy the relationship $\text{hydrogen desorption ratio} > 0.260 - 6.25 \times 10^{-4} \times \text{CTAB (wt\%)}$ as recited in amended claim 1.

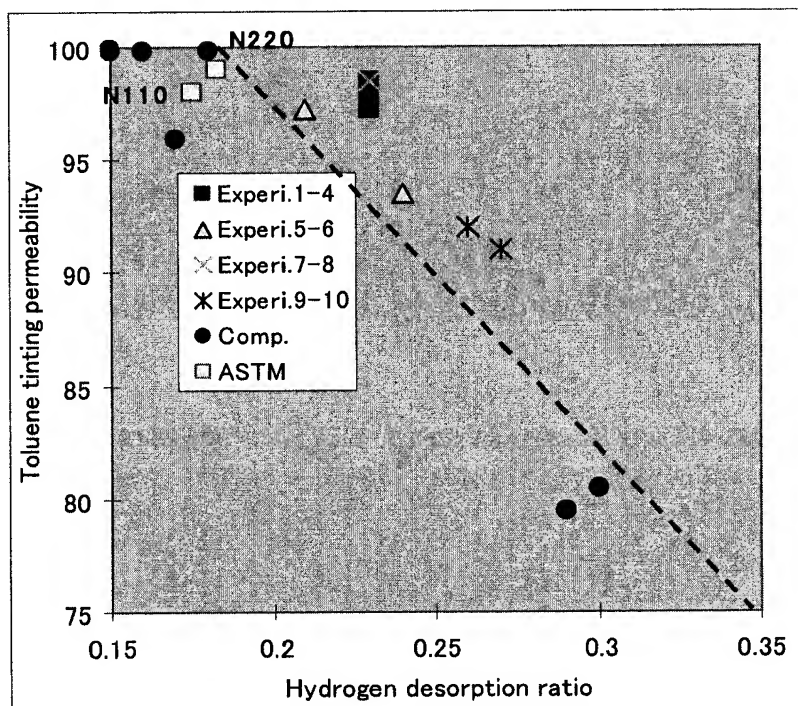
	N110	N115	N121	N219	N220	N229	N234
IA	145	160	121	118	121	108	120
DBP	113	113	132	78	114	124	125
24M4DBP	98	96	112	75	100		100
CTAB	126	128	121	107	111	104	119
BET	143	145	132	116	119		126
Toluene tinting permeability	98				99		
Hydrogen desorption ratio	0.175		0.195		0.183		0.206

Since N110 and N220 meet the DBP, compressed DBP, CTAB, and TINT requirements of the present invention but do not meet the hydrogen desorption requirement of the present invention, Applicants submit that CB-1 and CB-2 do not necessarily meet the hydrogen desorption requirement of the present invention, even if they meet the DBP, compressed DBP, CTAB, and TINT requirements.

Further, Applicants submit that while Kikuchi '836 improves the wear resistance and heat buildup properties, it does so in a different way than the present invention.

In particular, the carbon black in Kikuchi '836 has a special ΔD_{st} , and that provides good wear resistance and heat buildup properties (see, e.g., col. 3, lines 54-60). ΔD_{st} is determined by the size of carbon aggregates, not the character of the carbon black surface.

In contrast, the process by which the presently claimed carbon black is made affects the character of the surface of the carbon black. The carbon black of the present invention has a surface that has many functional groups and little tar because it is made by the recited process. Little tar is represented as toluene tinting permeability of not less than 90%, and many functional groups correspond to a high hydrogen desorption ratio. As shown in the figure set forth below, it is difficult to achieve both a high toluene tinting permeability and a high hydrogen desorption ratio, but the present invention achieves that combination by the particular process as recited.



Kikuchi '836 does not teach or suggest distinguishing between tar and the functional groups on the carbon black surface, and thus does not teach or suggest the present invention.

Thus, Applicants submit that the present invention is neither anticipated by nor obvious over Kikuchi '836, and withdrawal of this rejection is respectfully requested.

Response to Claim Rejection Under § 103

Claim 11 is rejected under 25 U.S.C. § 103(a) as allegedly being unpatentable over Kikuchi '836 in view of Amino. Applicants respectfully traverse.


Amino fails to make up for the deficiencies of Kikuchi '836 discussed above. Accordingly, Applicants submit that the claimed invention is not obvious over Kikuchi '836 in view of Amino, and withdrawal of the rejection is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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